Space Weather Forecast

Issued on Wednesday 12 March 2025 at 13:05 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate-class flares. Chance G1/Minor Storms Day 1. G1/Minor Storms likely Days 2 & 3, chance G2/Moderate Storms. Active fluence expected Days 1 & 2.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with an isolated Moderate-class flare observed at 11/1304 UTC from a small region in the northwest. There are eleven regions on the Earth-facing disc. The main region of interest resides in the northeast, and has seen continued development in areal extent and remains magnetically complex. The aforementioned small region in the northwest continues to weaken and simplify, however it was responsible for a good portion of the flare activity in the past 24 hours. Two new regions have emerged in the east, close to the limb. The remaining spots have shown little change and are generally stable at present.

No Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: Solar winds showed a declining connection to a coronal hole at first, rising slightly later in the period. Wind speeds were initially near strong, declining to slow-ambient levels, before rising after 12/0500 UTC to slightly elevated levels once again. Interplanetary Magnetic Field started weak and gradually rose to moderate. The north-south component was weakly variable initially, becoming predominantly moderately negative from 11/2130 UTC. Geomagnetic activity was Quiet to Active (Kp1-4).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is most likely, with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No CMEs feature in the forecast. Ongoing fast winds continue on a slow, if erratic, decline. The next coronal hole fast wind enhancement is most likely to occur during Day 2 (13 Mar), perhaps reaching 600+ km/s again. This fast wind should then ease later Day 3 into Day 4.

Geomagnetic activity is expected to be mainly Unsettled through Day 1 (12 Mar) , with a chance of Active to G1/Minor Storm intervals. On Days 2 and 3 (13-14 Mar) a spell of Active to G1/Minor

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Storms are considered likely, with a chance of isolated G2/Moderate Storm intervals. Geomagnetic activity should then reduce through Day 4 (15 Mar) perhaps falling back to Quiet to Unsettled by the end of the day.

Energetic Particles / Solar Radiation: The count rate of energetic particles is most likely to remain at background levels.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	45	80	60	20
Strong	G3	No	1	5	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	40	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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